



 Cisco
Connect
Riyadh, Saudi Arabia
April 29-30, 2014

*TOMORROW
starts here.*

Applications @ UCS

Mazen Abou Najm

DC Consulting Systems Engineer



Agenda

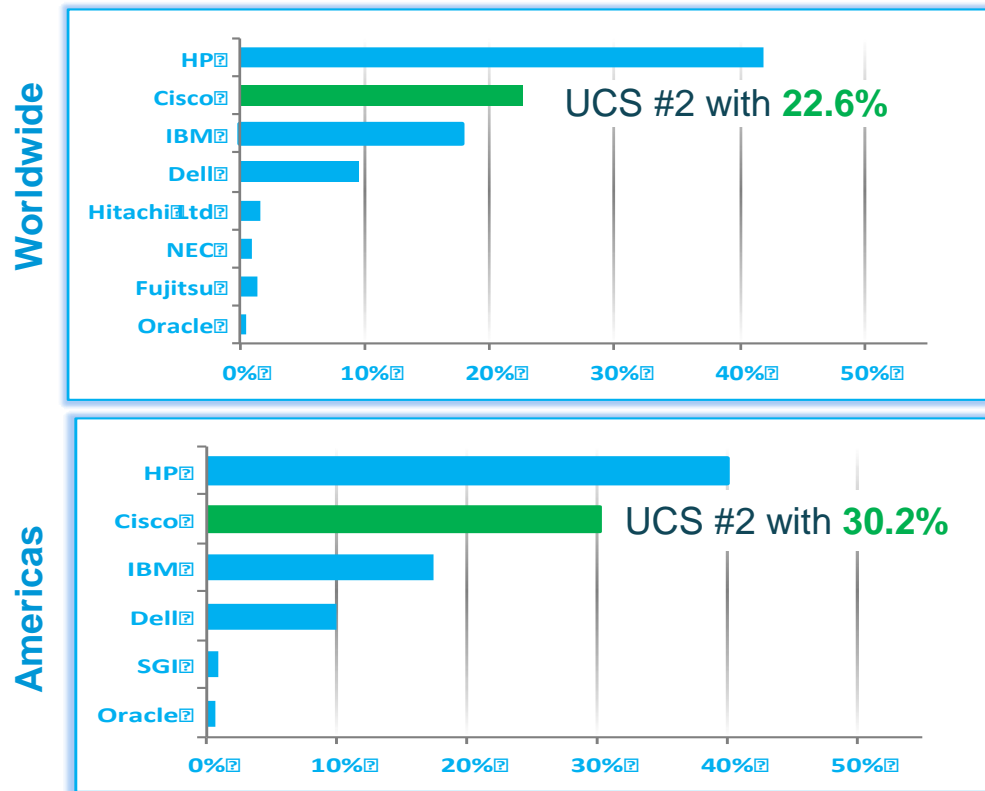
- UCS Performance
- Cloud Orchestration & Automation Update
- Enterprise Applications Update
 - Microsoft
 - SAP
 - Oracle
 - BigData & HPC
 - VDI (Citrix & VMware)
- Q & A



UCS Performance Benchmarks

UCS Market Share Growth

X86 Server Blade Market Share Q4CY13



- UCS momentum is fueled by industry leading innovation
- UCS x86 Blade servers revenue grew 37% Y/Y in Q4CY13¹
- Maintained #2 in Americas (30.2%), #2 in N. America (31.8%) and #2 in the US (32.1%)¹
- Maintained #2 worldwide in x86 Blades with 22.6%

Source: ¹ IDC Worldwide Quarterly Server Tracker, Q4 2013, February 2014, Vendor Revenue Share



Cisco UCS Performance: 90 Records

The Best Performance

21

CPU

17

Virtualization/Cloud

6

Database

14

Enterprise Application

15

Enterprise Middleware

17

HPC

Current UCS Compute Portfolio

Performance Optimized for Bare Metal, Virtualized, and Cloud Applications

Cisco UCS: Many Server Form Factors, One System
Industry-Leading Compute Without Compromise

Scale Out



UCS C24 M3

Entry, Expandable Rack Server for Storage Intensive Workloads



UCS C22 M3

Entry Rack Server for Distributed and Web Infrastructure Applications

Enterprise Performance



UCS C240 M3

Ideal Platform for Big Data, ERP, and Database Applications



UCS C220 M3

Versatile, General Purpose Enterprise Infrastructure, and Application Server

Intensive/Mission Critical



UCS C460 M4

Mission-Critical, 4-Socket Server for Large, CPU-Intensive Applications



UCS B22 M3

Entry Blade Server for IT Infrastructure and Web Applications



UCS B200 M3

Optimal Choice for VDI, Private Cloud, or Dense Virtualization/Consolidation Workloads



UCS B420 M3

Enterprise Class, 4-Socket Blade for Large, Memory-Intensive Bare Metal and Virtualized Applications



UCS B260 M4

Mission-Critical, 2-Socket Blade for Large, CPU-Intensive Bare Metal and Virtualized Applications



UCS B460 M4

Mission-Critical, 4-Socket Blade for Large, CPU-Intensive Bare Metal and Virtualized Applications

Post-Grantley Consolidated UCS Compute Portfolio

Performance Optimized for Bare Metal, Virtualized, and Cloud Applications

Cisco UCS: Many Server Form Factors, One System
Industry-Leading Compute Without Compromise

Scale Out

Enterprise Performance

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Mission-Critical, 2-Socket Blade for
Large, CPU-Intensive Bare Metal
and Virtualized Applications



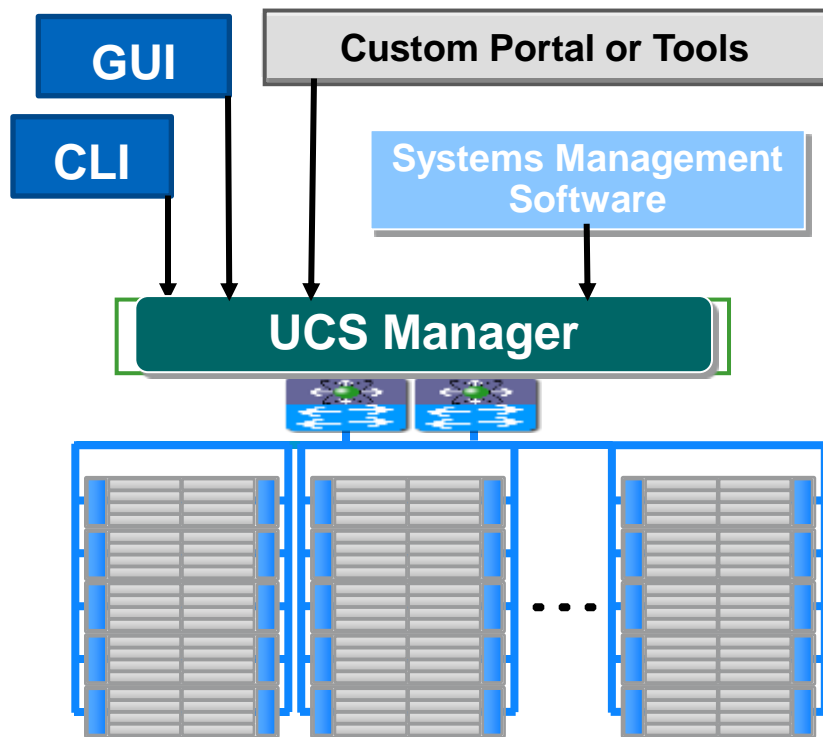
UCS B460 M4

Mission-Critical, 4-Socket Blade for
Large, CPU-Intensive Bare Metal
and Virtualized Applications



Cloud Management Update

UCS Manager – The Main Pillar



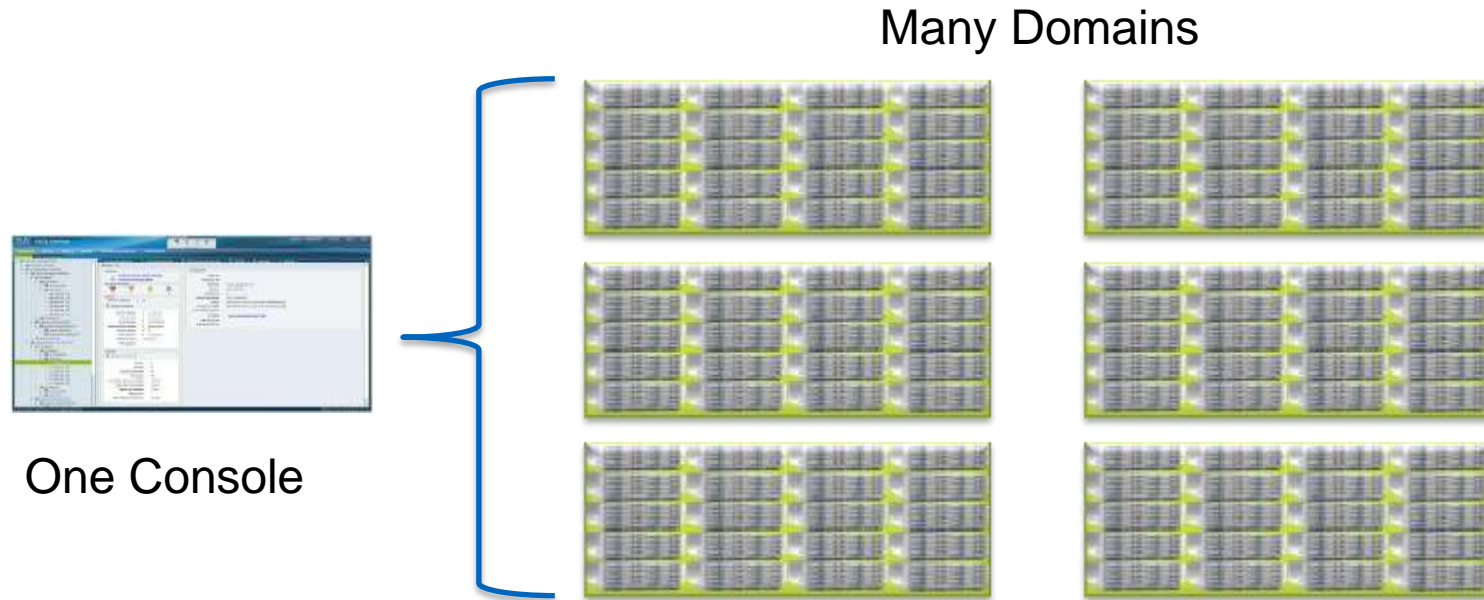
- Single point of management for UCS system of components
 - Adapters, blades, chassis, fabric extenders, fabric interconnects
- Embedded device manager
 - Discovery, Inventory, Configuration, Monitoring, Diagnostics, Statistics Collection
 - Coordinated deployment to managed endpoints
- APIs for integration with new and existing data center infrastructure
 - SMASH-CLP, IPMI, SNMP
 - XML-based SDK for commercial & custom implementations

UCS Platform Emulator

- Emulates UCSM
 - Full GUI
 - API
 - Power Tools
 - Inventory
- No OS or Environmental
- Download (Free)
 - developer.cisco.com
 - OVA Format



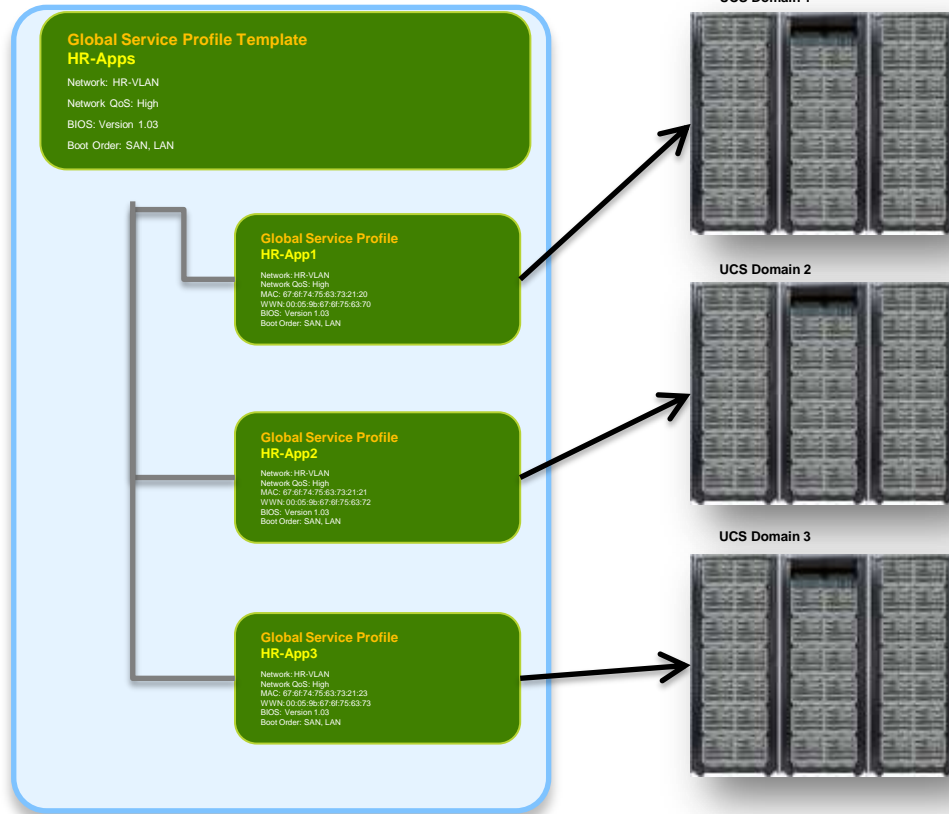
UCS Central – Multi Domain Management



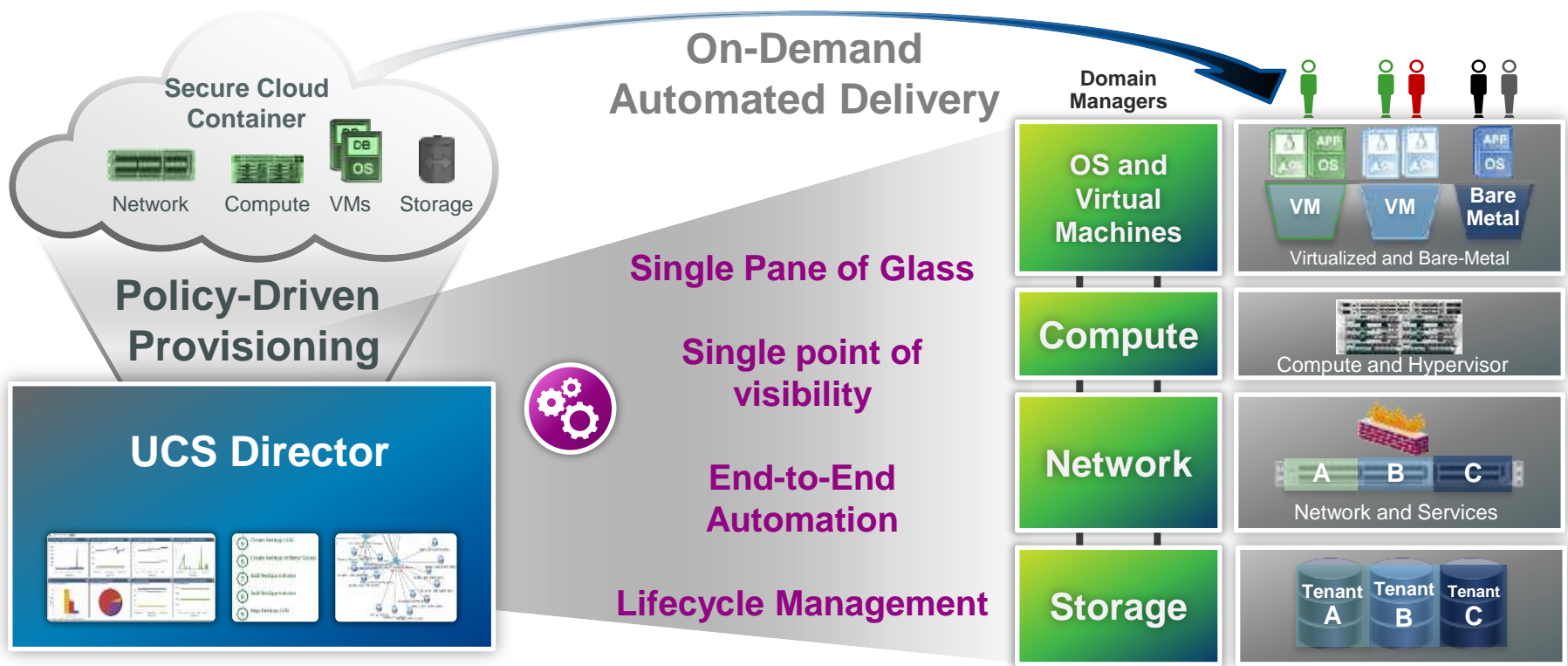
UCS Central: Centralized management for multiple UCS Domains

Global Service Profiles & Templates

- Global Templates defined in UCS Central
- Global templates use global policies
- Global Service Profiles derived from Global SP templates
- Global Service Profiles can be attached to Global Server Pools and Identifier Pools
- Global Server Pools can have members from multiple domains
- Global SPs can be deployed to domain of choice manually or through automatic association to a server in a pool



Cisco UCS Director



UCS Director: Agility and Simplicity for Virtualized and Bare-Metal IT Services



Application Owners



IT Admins



IT Operations

Open API for
Integration



Self Service Console

Admin Console

Dashboard

UCS Director

OS & VM Deployment

Policy Manager

Resource Pools

Physical Infrastructure

UCS Central



Virtual Infrastructure

Microsoft



redhat



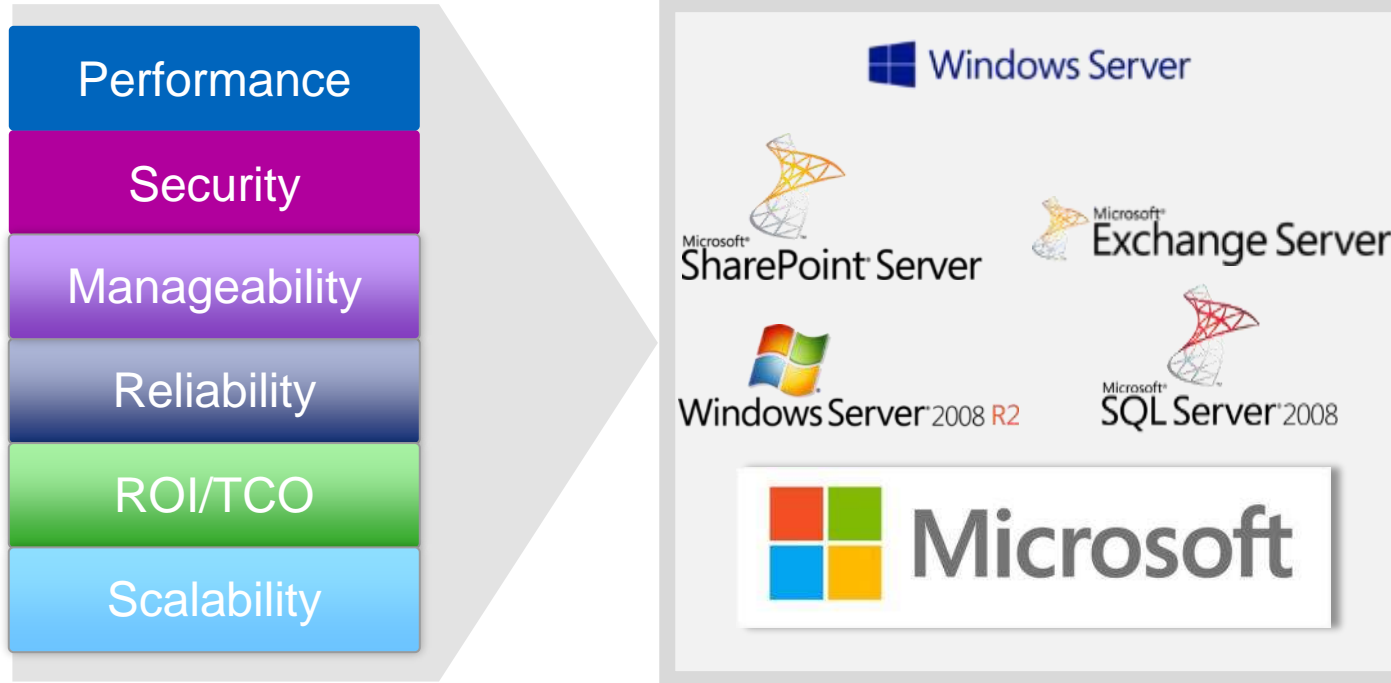
Centralized Lifecycle Management of Physical and Virtualization Infrastructure

Enterprise Applications Update



Microsoft Datacentre Applications

Increase Agility, Boost Performance, And Reduce Costs



- Validated Reference Architecture
- Sizing Tools
- Storage Layout
- BIOS Best Practices

System Center Components

Three Broad Capabilities







Application Management

-  **Application Controller**
-  **Virtual Machine Manager**
-  **Operations Manager**
-  **Configuration Manager**







Service Delivery and Automation

-  **Orchestrator**
-  **Service Manager**
-  **Operations Manager**
-  **Configuration Manager**



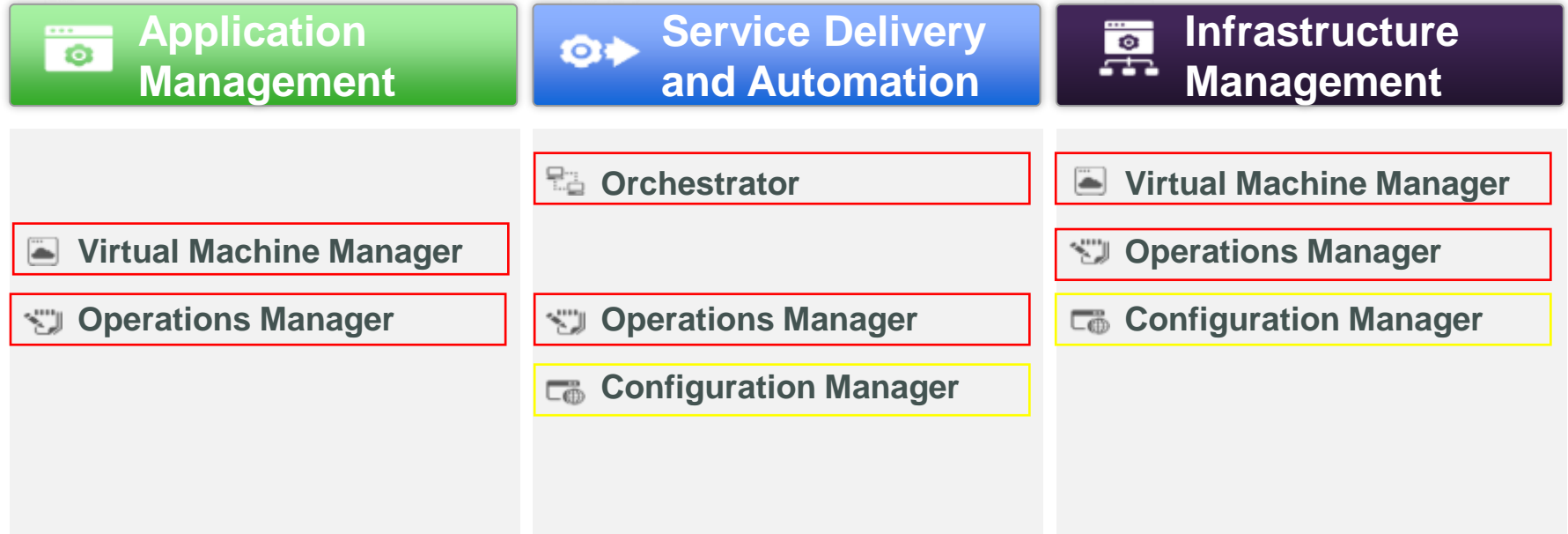
Infrastructure Management

-  **Virtual Machine Manager**
-  **Operations Manager**
-  **Configuration Manager**
-  **Data Protection Manager**

Microsoft System Center 2012 R2 provides an integrated management platform with a robust set of capabilities

UCS Leverage

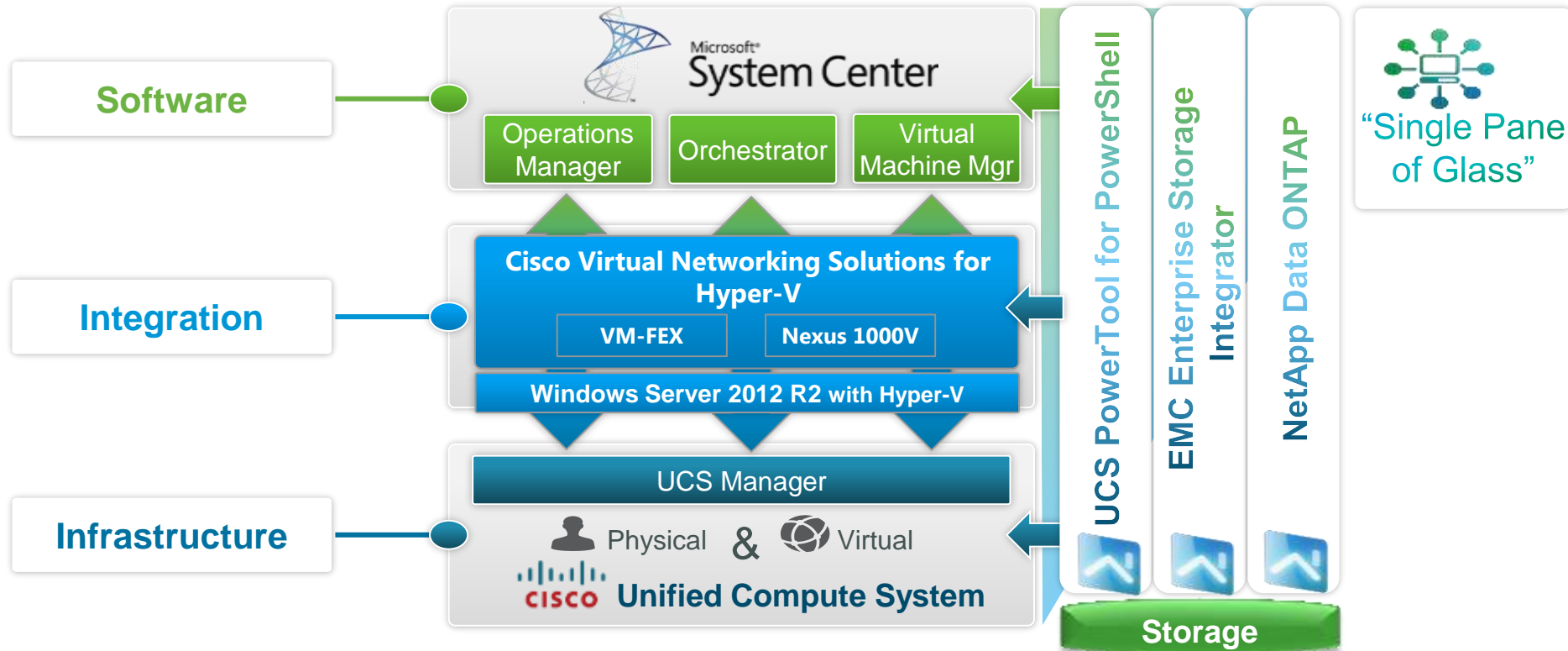
Key Components



Microsoft System Center 2012 R2 provides an integrated management platform with a robust set of capabilities

Cisco UCS And System Center 2012

Tight Integration – Ease IT management; Deliver integrated private cloud solutions



Management with Operations Manager

■ Holistic View of Converged Infrastructure Health

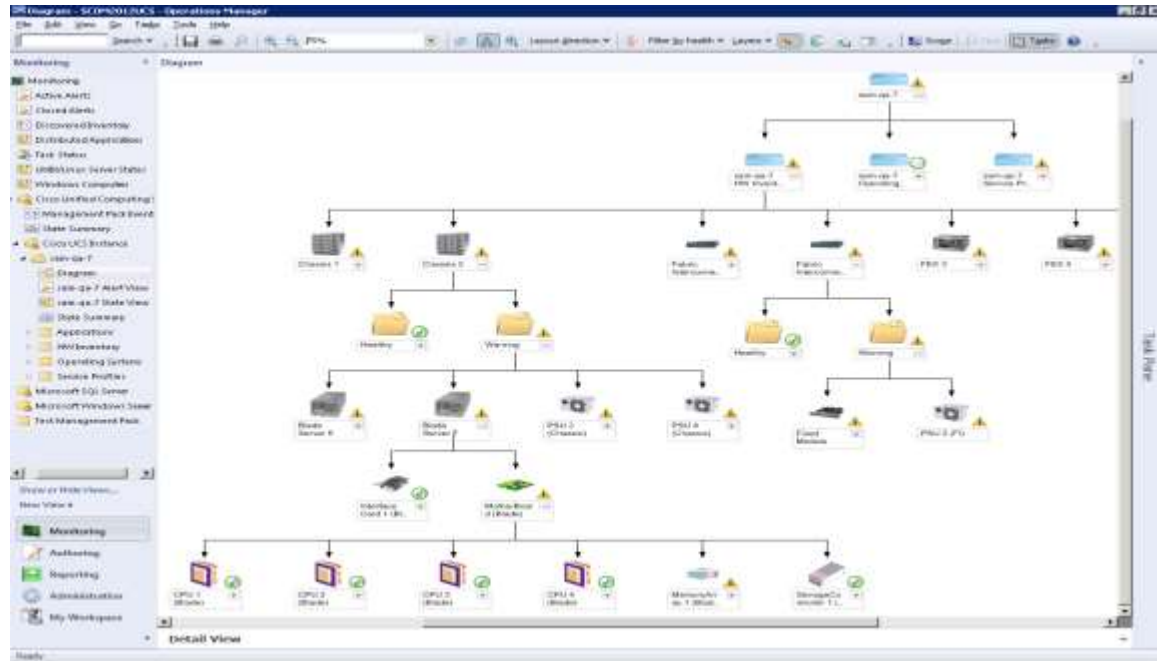
- Monitor alerts and faults on Chassis, Blades, Fabric Interconnects, I/O Power Supply, Fan Modules....
- Manage multiple UCS domains with single management pack

■ Simple and Powerful Visualizations

- Graphical Views of UCS topology
- Graphical views of physical and logical entities and relationships

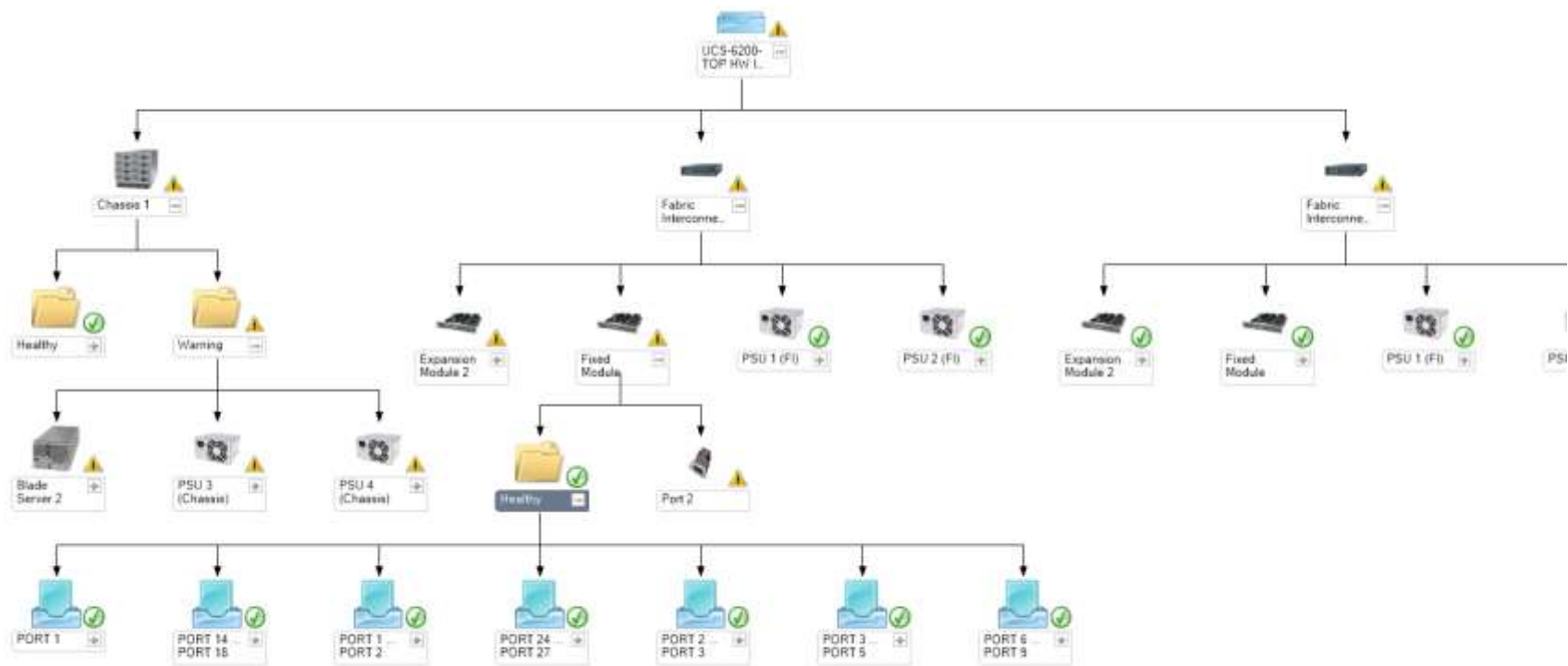
■ Reliable Information

- UCS XML API provides a powerful, supported interface for Operations Manager



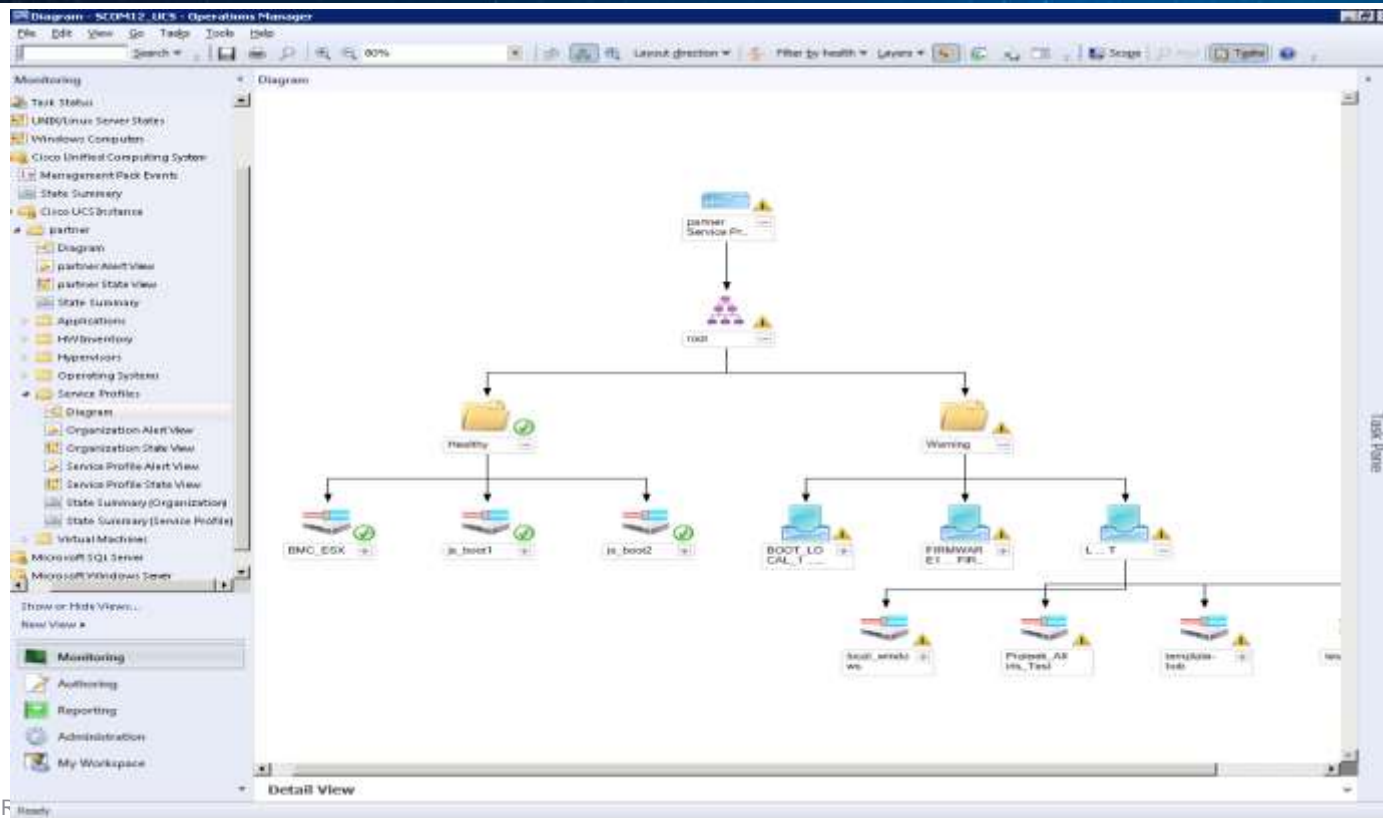
Management with Operations Manager

Equipment Inventory (Physical)



Management with Operations Manager

Service Profiles (Logical)



Management with Operations Manager

Faults

The screenshot displays the 'sam-qa-7 Alert View' in the Cisco Operations Manager console. The interface includes a menu bar (File, Edit, View, Go, Tasks, Tools, Help), a search bar, and a left-hand navigation pane. The main area shows a table of alerts with columns for Icon, Path, Source, Name, Resolution State, Created, and Age. The alerts are categorized by severity, with 'Warning (20)' selected. Below the table, the 'Alert Details' section provides information for a specific alert (F0283: link-down: fc VIF N/A / 1 A-1512 down, reason: waiting for flogi).

Monitoring

- Distributed Applications
- Task Status
- UNIX/Linux Server States
- Windows Computers
- Cisco Unified Computing System
 - Management Pack Events
 - State Summary
- Cisco UCS Instance
 - Diagram
 - Sam-qa-7 Alert View
 - Sam-qa-7 State View
 - State Summary
- Applications
- HWInventory
- Operating Systems
- Service Profiles
- Microsoft SQL Server
- Microsoft Windows Server
- Test Management Pack

Alert View (192)

Look for: [] Find Now Clear

Icon	Path	Source	Name	Resolution State	Created	Age
Warning	Sam-qa-7	RackUnit Server 1	F0283 : link-down : fc VIF N/A / 1 A-1512 down...	New	22-02-2012 12:02:22	4 Hours, 1
Warning	Sam-qa-7;2;7;0;1	MemoryUnit 1 (...)	F0844 : equipment-disabled : DIMM DIMM_C...	New	21-02-2012 23:48:50	16 Hours,
Warning	Sam-qa-7;2;7;0;1	MemoryUnit 9 (...)	F0844 : equipment-disabled : DIMM DIMM_C...	New	21-02-2012 23:48:23	16 Hours,
Warning	Sam-qa-7;2;7;0;1	MemoryUnit 11 (...)	F0844 : equipment-disabled : DIMM DIMM_C...	New	21-02-2012 23:47:26	16 Hours,
Warning	Sam-qa-7;4	Fan 3 (FEX)	F0373 : equipment-inoperable : Fan 3 in fex 4...	New	21-02-2012 23:32:28	16 Hours,
Warning	Sam-qa-7;3	Fan 3 (FEX)	F0373 : equipment-inoperable : Fan 3 in fex 3...	New	21-02-2012 23:32:13	16 Hours,
Warning	Sam-qa-7;A	PSU 2 (F)	F0369 : power-problem : Power supply 2 in fa...	New	21-02-2012 23:32:11	16 Hours,
Warning	Sam-qa-7;A	PSU 2 (F)	F0374 : equipment-inoperable : Power suppl...	New	21-02-2012 23:32:11	16 Hours,
Warning	Sam-qa-7;B	PSU 2 (F)	F0369 : power-problem : Power supply 2 in fa...	New	21-02-2012 23:32:20	16 Hours,
Warning	Sam-qa-7;B	PSU 2 (F)	F0374 : equipment-inoperable : Power suppl...	New	21-02-2012 23:32:20	16 Hours,
Warning	Sam-qa-7;3	PSU 2 (FEX)	F0374 : equipment-inoperable : Power suppl...	New	21-02-2012 23:32:21	16 Hours,
Warning	Sam-qa-7;3	PSU 2 (FEX)	F0369 : power-problem : Power supply 2 in fe...	New	21-02-2012 23:32:21	16 Hours,
Warning	Sam-qa-7;4	PSU 2 (FEX)	F0369 : power-problem : Power supply 2 in fe...	New	21-02-2012 23:32:21	16 Hours,
Warning	Sam-qa-7;4	PSU 2 (FEX)	F0374 : equipment-inoperable : Power suppl...	New	21-02-2012 23:32:21	16 Hours,

Alert Details

F0283 : link-down : fc VIF N/A / 1 A-1512 down, reason: waiting for flogi

Source: RackUnit Server 1

Full Path Name: sam-qa-7\RackUnit Server 1

Alert Rule: Server (RackUnit) General Rule

Created: 22-02-2012 12:02:22

Alert Description

fc VIF N/A / 1 A-1512 down, reason: waiting for flogi

Knowledge: View additional knowledge...

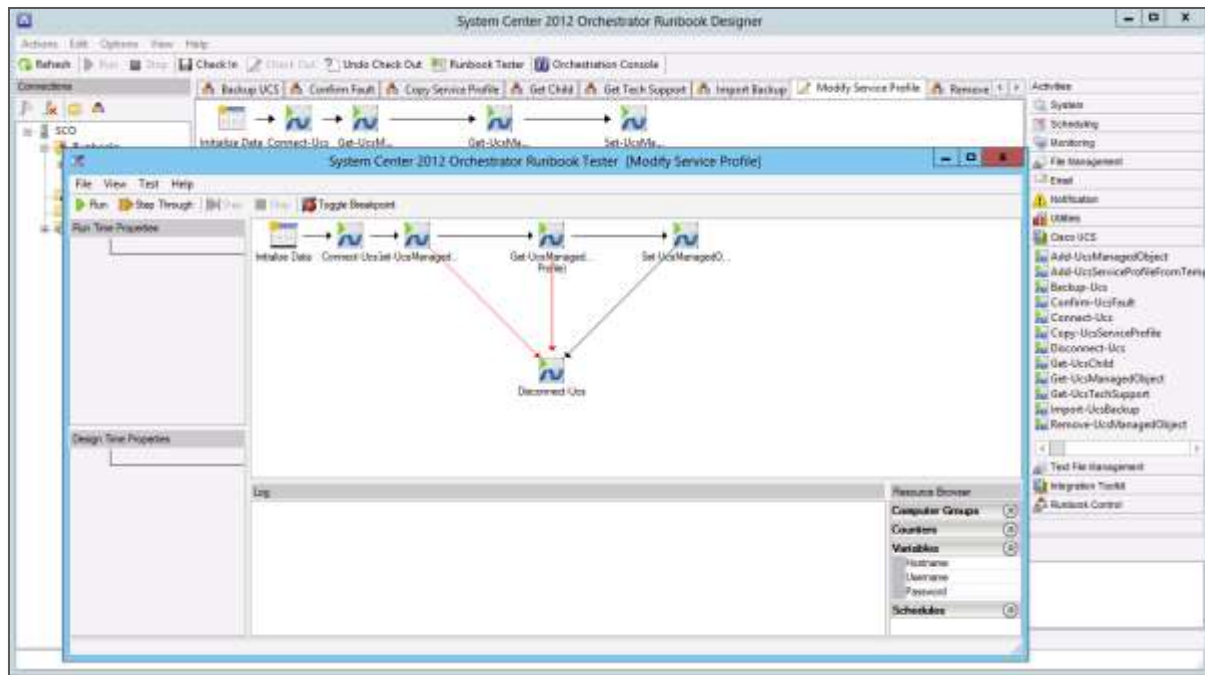
Summary

Faults in Cisco UCS are stateful. Only one instance of a given fault can exist on each object. If the same fault occurs a second time, Cisco UCS increases the number of occurrences by one.

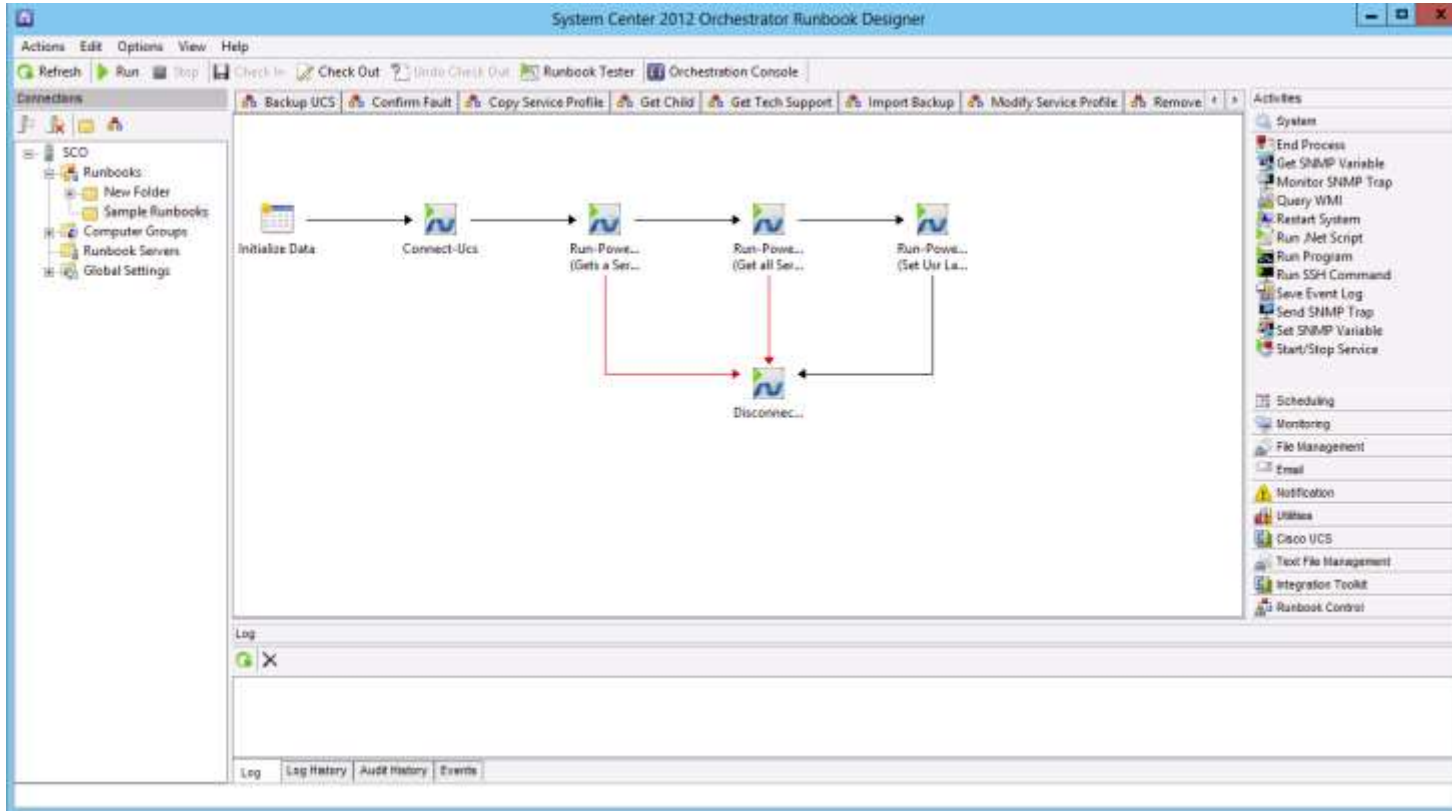
A fault has the following lifecycle:

Automating tasks for Cisco UCS with Orchestrator

- Automate UCS management
 - Improve predictability and reduce manual errors with UCS integration pack
 - Reduce time to delivery and reduce TCO
 - Packaged UCS activities for consistent delivery of UCS operations
- Deliver Scalable and Reliable UCS management through Orchestrated Workflows
 - Deliver consistent service across multiple systems and departments
 - Packaged workflows to automate UCS operations
 - UCS XML API provides a powerful interface for Orchestrator workflow operations
- Optimize and extend UCS capabilities
 - Integrate with 3rd party tools using Cisco UCS integration pack



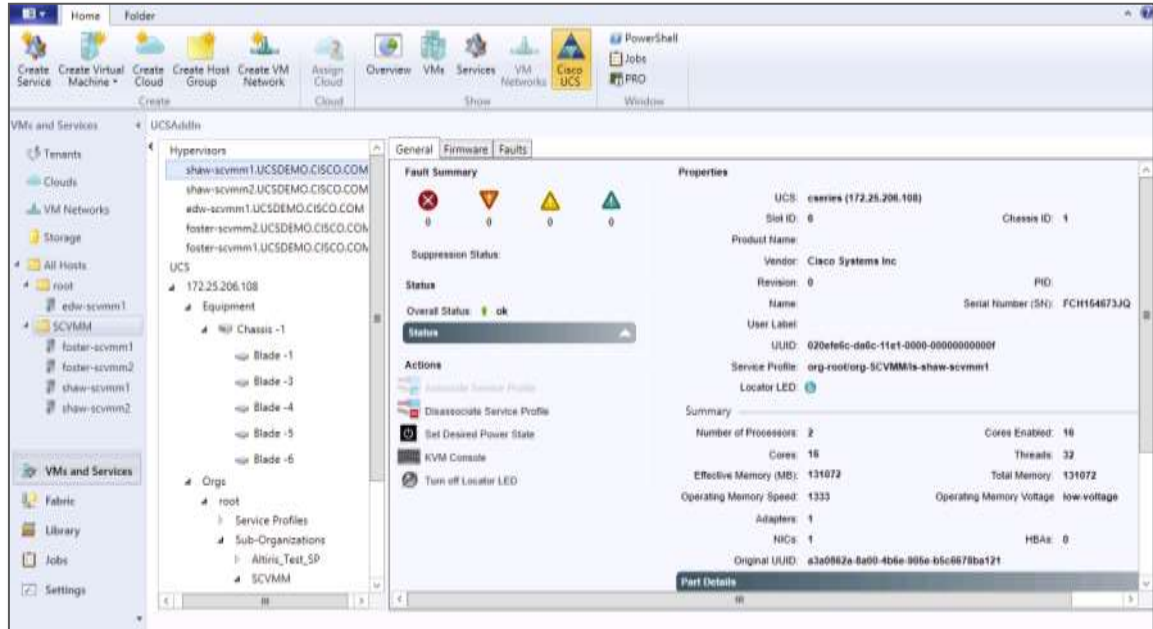
Automating tasks for Cisco UCS with Orchestrator



Many sample run books are provided with the Cisco UCS Integration pack for SCO to automate tasks in UCS

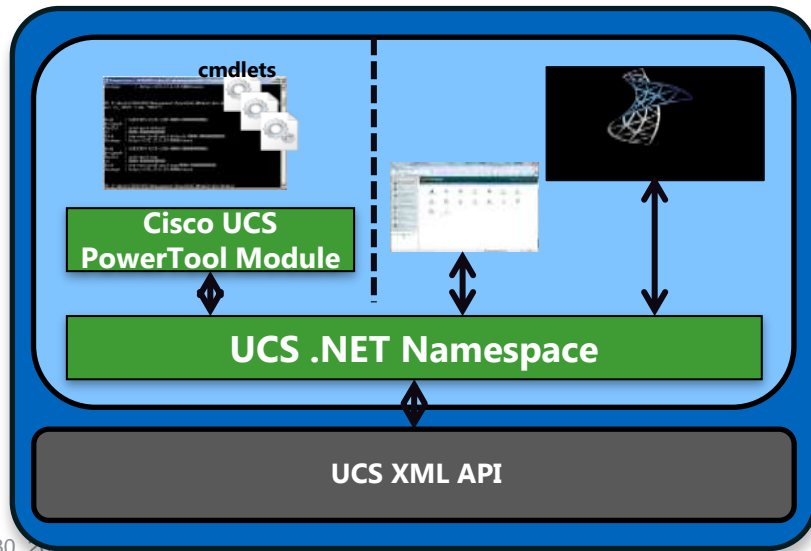
Cisco UCS UI Extension for SCVMM

- Manage your private cloud from a single console
 - Physical, compute and virtual infrastructure in one place
- Show UCS inventory in SCVMM
 - Launch UCSM GUI from SCVMM
 - Summary status of servers
- Basic server functions
 - SP association
 - Launch KVM
 - Change power/server status
- Service Profile Template Support
 - Instantiate service profiles
 - View templates
- Correlate from service profile to physical servers and hypervisor



PowerTool – What is It?

- PowerTool is a module for PowerShell
- Automatically generated by Cisco for each major UCSM release
 - 99% auto generated
- ~100% of what you can do in UCSM CLI and GUI you can do in PowerTool
- Full .NET



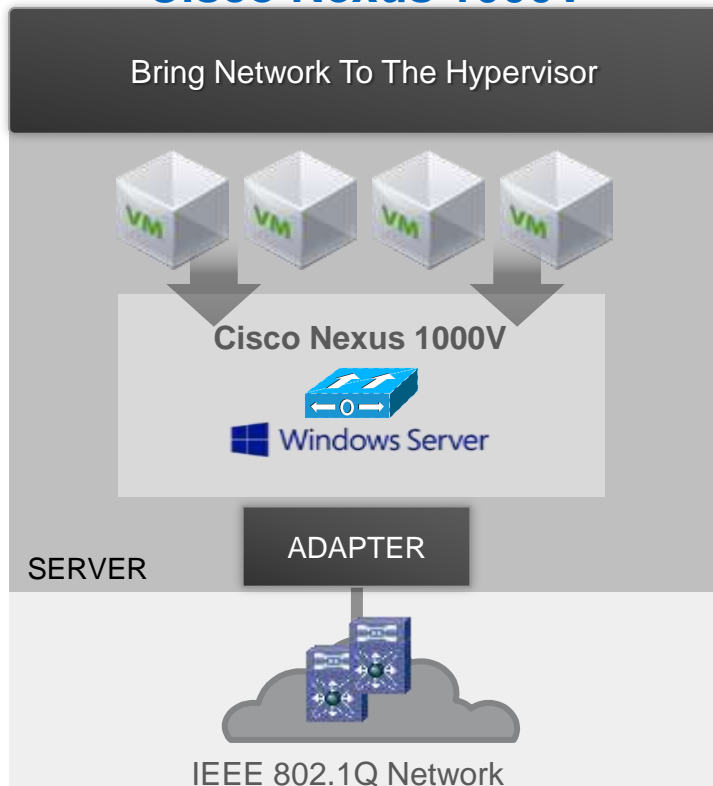
Use Cases?

- Fresh Install
 - Create standard equipment policies
 - Configure server, uplink, fc ports
 - Setup pools and service profile templates
- Reporting
 - Inventory, Serial Numbers, associated SP's..
 - Tabular format
 - Several domains
- Backups
- KVM Launcher
- Generate SAN Zoning (Cisco, Brocade)

Cisco Virtual Networking for Windows

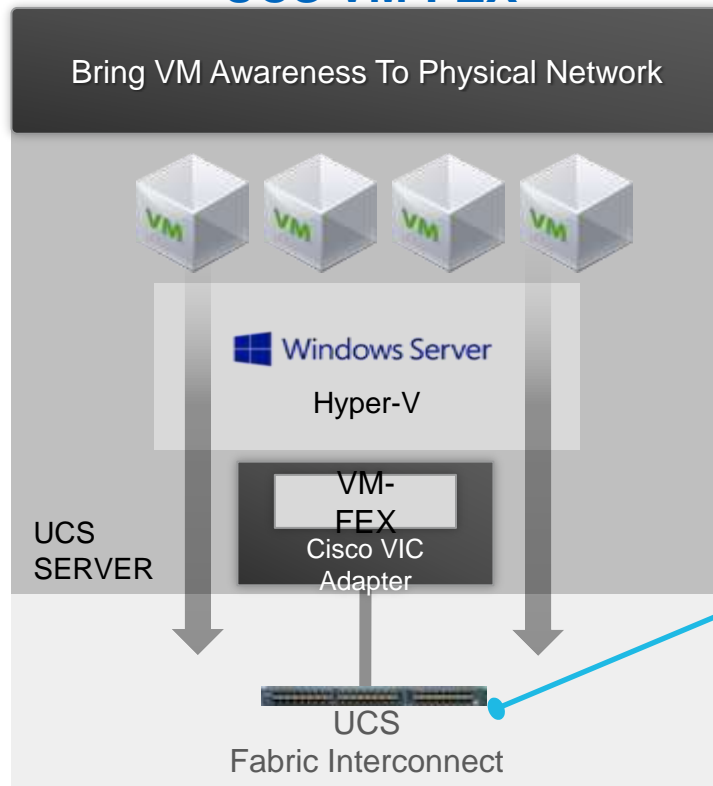
Cisco Nexus 1000V

Bring Network To The Hypervisor



UCS VM-FEX

Bring VM Awareness To Physical Network



Traffic Flow

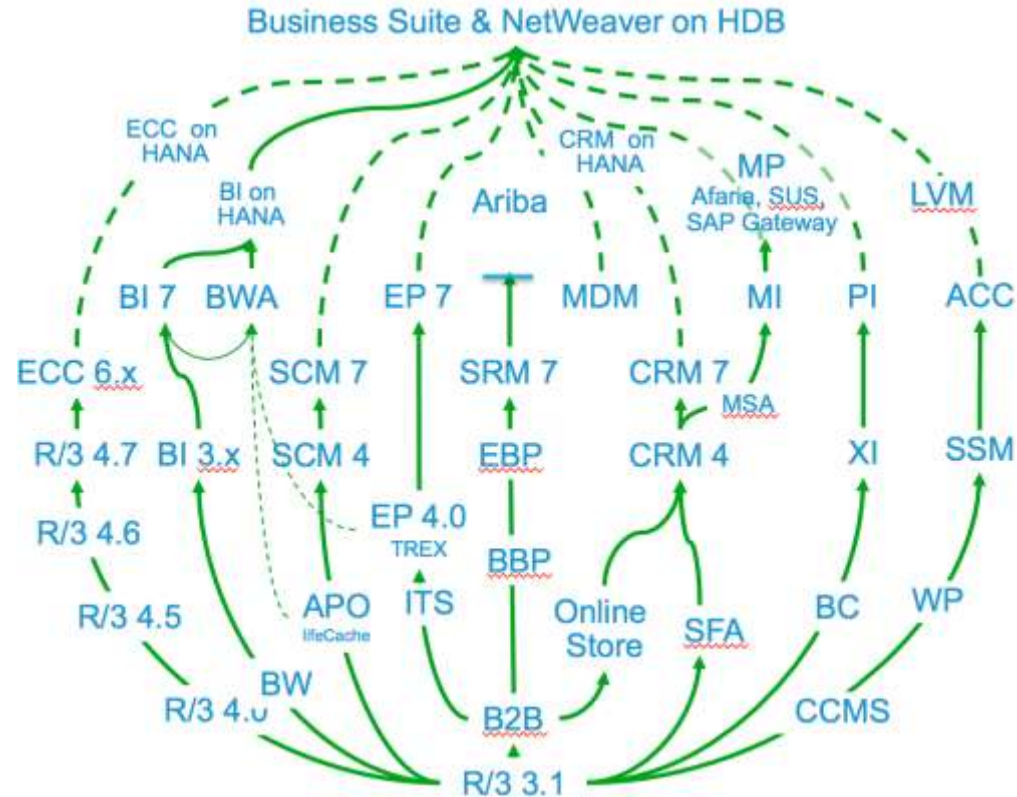
VM traffic switched in hardware – no soft switch needed

Enterprise Applications Update






HANA: One Database To Store Them All

- In Memory
- Column Based vs Row Based
- Optimization for E7 Cache Architecture
- Delivered as an appliance



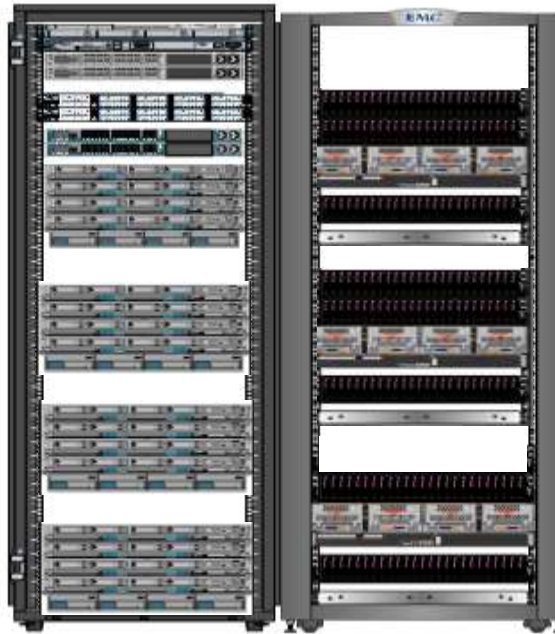
Cisco's UCS Portfolio for SAP HANA

Cisco Servers	Details
<i>B260 M4</i> SAP XS & S sizes 	Analytic/BW/SoH: 128G & 256G 2 x Intel Xeon E7-2890 CPU Fusion-io MLC PCI-X card
<i>C460 M4</i> SAP S, M, L - sizes 	Analytic/BW/SoH: 256G, 512G & 1T Suite on HANA: 2T 2 or 4 x Intel Xeon E7-4890 CPU 6 SSD Fusion-io MLC PCI-X card
<i>B260, B460 and C460 M4</i> SAP scale-out sizes 	4 x Intel Xeon E7-4890 CPU 512GB or 1024GB per Blade and/or 1024G Rack server Shared storage (EMC VNX5400 or NetApp FAS8040) Scales 3 to 16 blades

HANA “cloud ready” on Cisco UCS with EMC

Cisco Components

- N xCisco Blades B440M2
 - 4 * Intel® Xeon® E7-4870 processor on each blade (10 cores each)
 - 512GB DRAM
 - 2VIC cards
- 2 * Nexus 5596UP Switches
- 2 * Nexus 2224 Fabric Extender
- 2 * UCS 6248UP Fabric Interconnect
- N/4 * UCS 5108 Blade Server Chassis
- 2 * UCS 2204 Fabric Extender
- 2 * C220 Rack Mount Server (Management Server)
- 1 * C2911 Integrated Service Router



EMC Components

- 1 * DPE with 25 * 600GB SAS
- 2 * DAE with 25 * 600GB SAS each
- 4 * Onboard IO Ports
- 4 * additional IO Ports Slot A0 (8Gbps)
- 1 * ControlStation
- 2 * DataMover (one active, one standby)
- 1 * Standby Power Supply (SPS)
- 1 * EMC 19” Rack for VNX
- Software
 - VNX OE for BLOCK
 - VNX OE for FILE

HANA “cloud ready” on Cisco UCS with NetApp

Cisco Components

- 2 x Nexus 5548UP 10 GB Switches
- 2 x Nexus 2224 Fabric Extender
- 2 x UCS 6248UP Fabric Interconnect
- N x Cisco Blades B440 M2
 - 4 x Intel® Xeon® E7-4870 (10 cores) 512GB DRAM, 2VIC cards
- N/4 x UCS 5108 Blade Chassis
- N/4 x UCS 2204 Fabric Extender
- 2 * C200 M3 for HANA Studio/Modeler, Management etc.
- 1 * C2811 Integrated Service Router

NetApp Components

- N/4 x FAS3250 HA

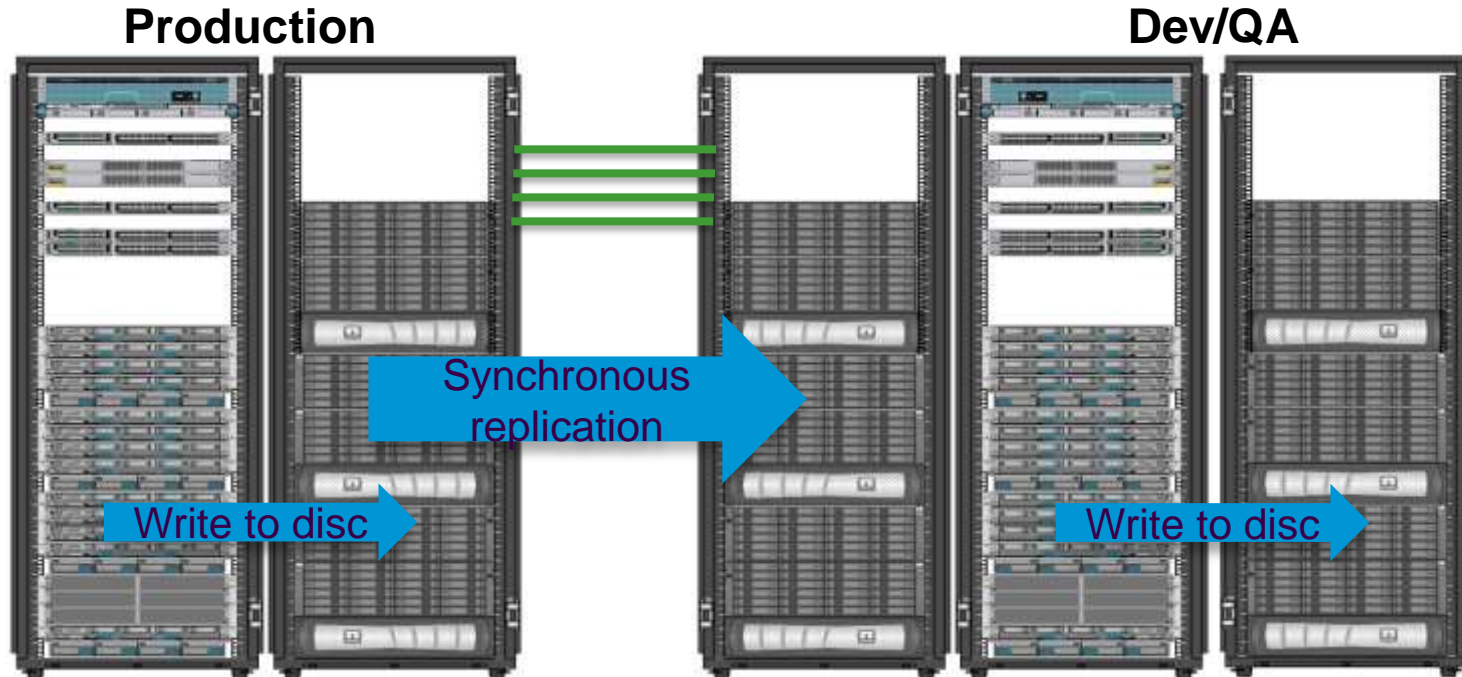


The eBay Solution

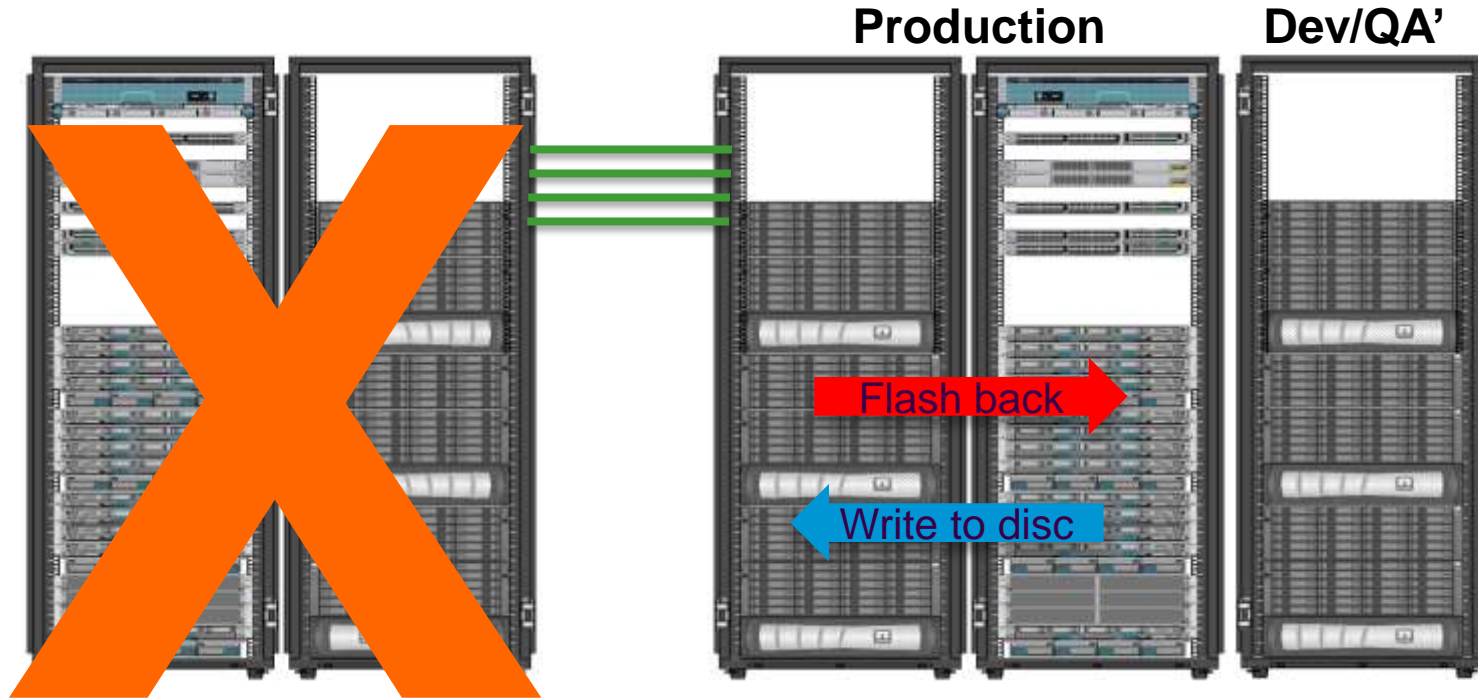
- How / Why we are using Cisco & SAP
 - Hardware arrived Tuesday
 - 20 pallets of parts weighing 4000 pounds
 - Completed a fully functional 12 TB HANA system (1.7M SAPS) by Thursday 2 pm
 - Loaded the ECC Bank statement tables Friday for analysis on cash movements
- Phase 1
 - Production, Non-Production, DR
 - Standardizing all HR and Financial applications across all eBay's properties
 - Executives will be able to strategize off collective data from real-time analytics reports



HANA DT with storage based mirroring utilizing proven storage replication technologies



HANA DT with storage based mirroring utilizing proven storage replication technologies



Enterprise Applications Update

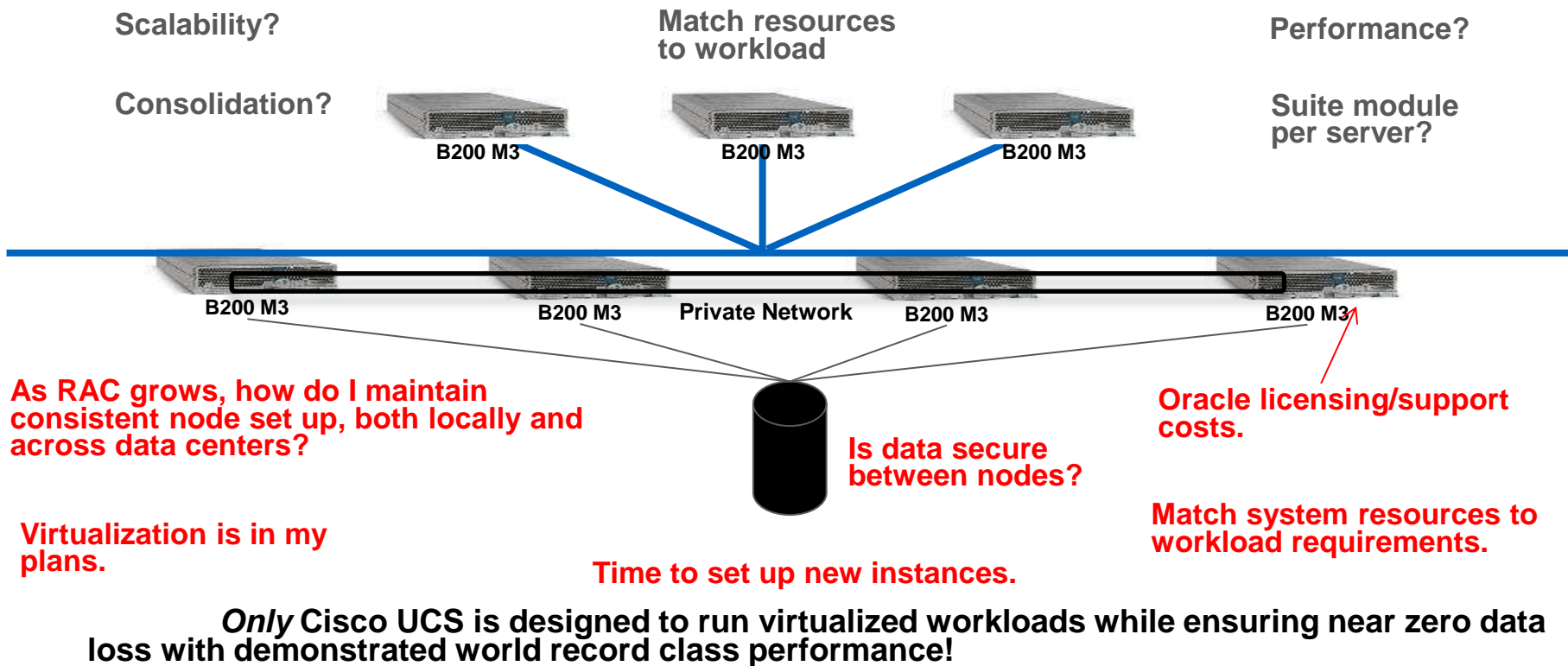


Did You Know?

- Cisco Systems is the #2 largest Oracle E-business customer globally, we also run smaller implementations of Siebel, Peoplesoft, and other apps.
- Cisco trusts Cisco Unified Computing System to run Oracle solutions – period 😊
- Cisco has #1 performance benchmarks across all of the core four Oracle Applications
- Cisco has Cisco Validated Designs for each core four applications, now extending into Converged Architectures such as Flexpod .
- The best practices for Oracle we ask YOU to adopt WE use ourselves!

Oracle Solution Concerns

You have to look at the database tier when considering the apps/web tier

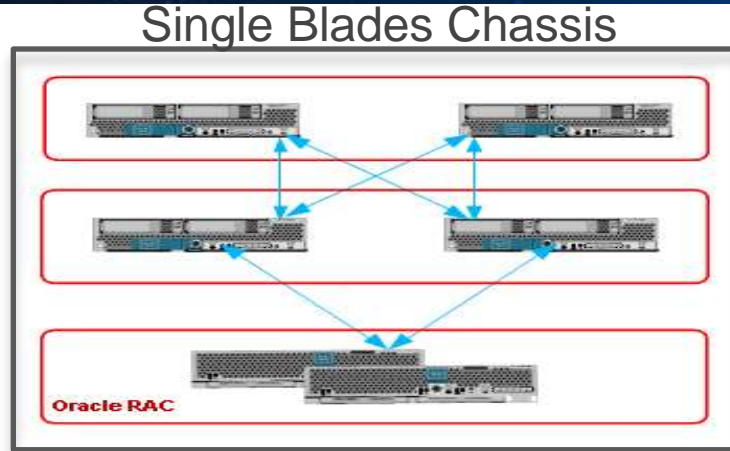


Oracle Core Application Expertise

Web Tier

Application Tier

Database Tier



- **Oracle E-Business Suite**
- **PeopleSoft**
- **JD Edwards**
- **Siebel**

Cisco Validated Designs:

- Best Practices
- Implementation Tips
- Design Guides

Application Benchmarks:

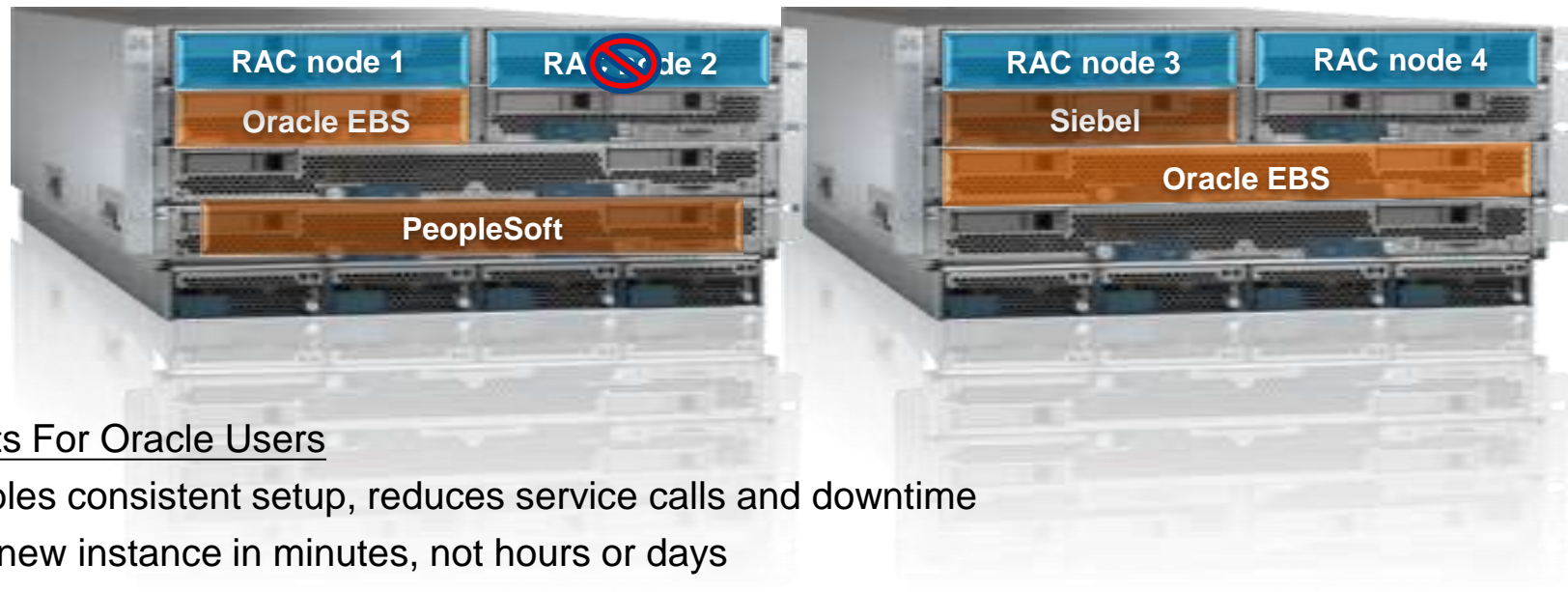
- Heart of YOUR business
- Established leader
- Bare metal & virtualized

Sizing Guides:

- Detailed configurations
- B-Series or C-Series
- Data from benchmarks and scaling proof points
- Performance tips

Service Profiles

Easily match workloads to system resources.



Benefits For Oracle Users

- Enables consistent setup, reduces service calls and downtime
- Add new instance in minutes, not hours or days
- Immediately test if workload is CPU or memory constrained
- Automatically load profile when new server added to system
- No LAN, SAN Zoning or any reconfiguration

Oracle Performance Records

Now 27 World Record Industry Standard Benchmarks & 6 Proof Points!



INDUSTRY
STANDARD

PROOF POINT



Enterprise Applications Update



What is Big Data?

Refers to large and diverse data sets whose size, type and speed of creation make it impractical to process and analyze with traditional technologies in a cost or time effective way.



Why Big Data – Use Cases

- Fraud Detection, risk analysis & recommendation engine for services

Financial

- Provide millions of customers with personalized smart utility guidance based on capacity and comparative use data

Utility

- Identify customer retention issues by improving user experience & operational efficiency

Service Provider

- Near real-time customer recommendation engine

Retail

- Storing & processing different varieties of data including text, images, and videos

Health

- From simple, resilient data storage to advanced analytics

Public Sector

Cisco UCS Big Data Partnerships



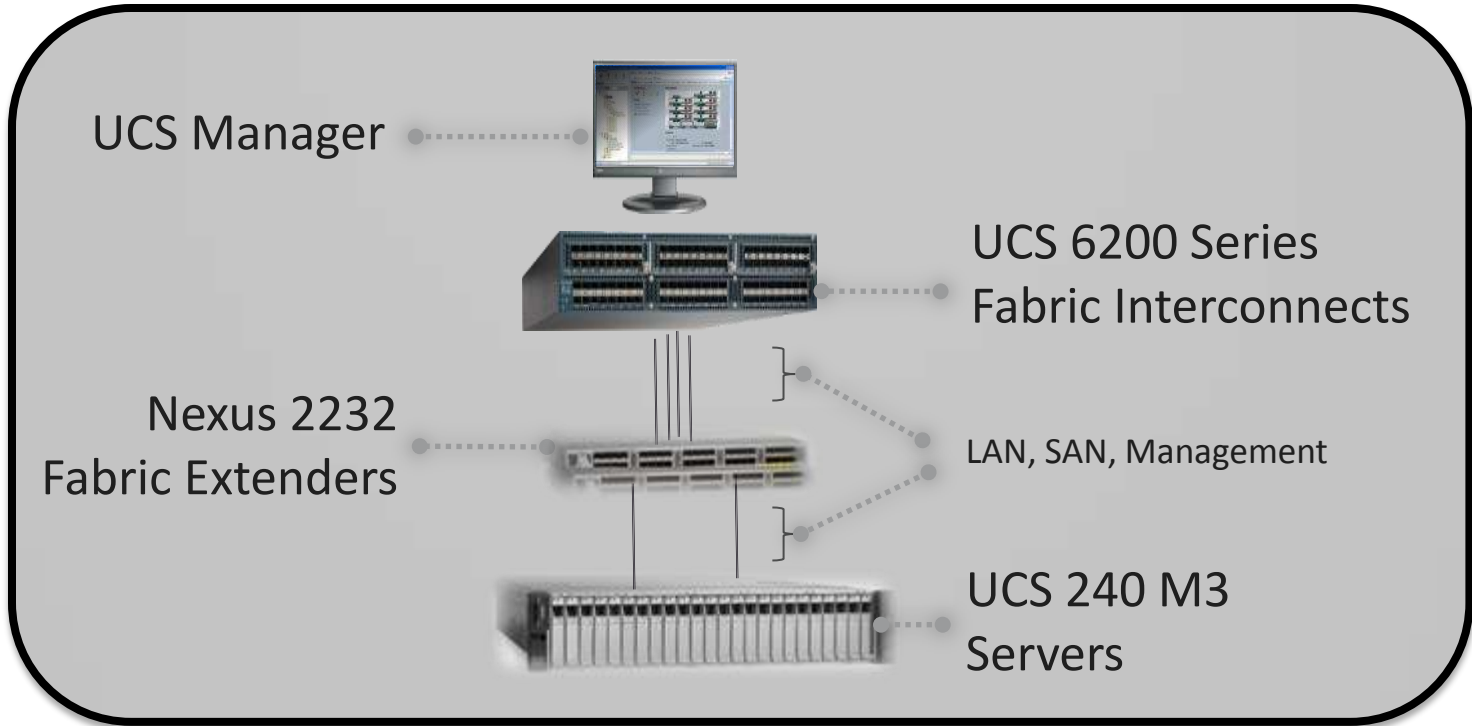
- Tested and Validated Reference Architectures
- Joint engineering Lab
- Solution Bundles
- Technical Collaterals

Cisco UCS Common Platform Architecture (CPA) for Big Data



- **Pre-Tested and Pre-Validated Configuration**
- **Predictable, Massive Scalability**—scales easily to 1000's of nodes
- **Broad and Strong Partnerships and Solutions** — with Cisco Validated Designs
- **Lower cost** for integrated compute + network infrastructure
- **Simple Operation**—start in minutes, scale in seconds

UCS CPA for Big Data Building Blocks



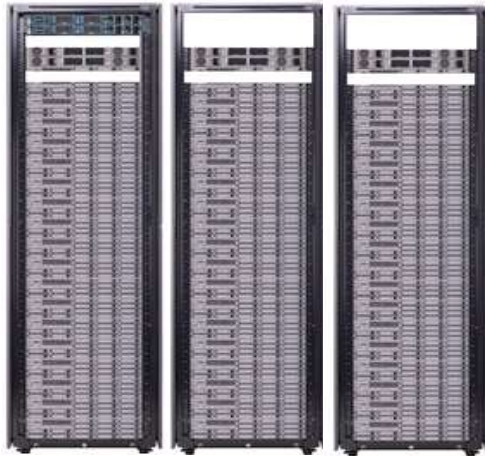
Cisco UCS CPA for Big Data V2

Architecture		Performance Optimized	Performance-Capacity Balanced	Capacity Optimized	Capacity Optimized with Flash
Server	Compute Unit	Cisco UCS C240 M3 Server	Cisco UCS C240 M3 Server	Cisco UCS C240 M3 Server	Cisco UCS C240 M3 Server
	Processor	2 x Intel Xeon E5-2680 v2	2 x Intel Xeon E5-2660 v2	2 x Intel Xeon E5-2640 v2	2 x Intel Xeon E5-2660 v2
	Memory	256GB	256GB	128GB	128GB
	Connectivity	Cisco UCS VIC 1225 (2x 10GbE)	Cisco UCS VIC 1225 (2x 10GbE)	Cisco UCS VIC 1225 (2x 10GbE)	Cisco UCS VIC 1225 (2x 10GbE)
	Storage Controller	LSI MegaRaid 9271CV 24 x 900GB 10K SFF SAS	LSI MegaRaid 9271CV 24 x 1TB 7.2K SFF SAS	LSI MegaRaid 9271CV 12 x 4TB 7.2K SFF SAS	Cisco UCS Nytro MegaRAID 200-GB 12 x 4TB 7.2K SFF SAS
	Storage Capacity	21TB	24TB	48TB	48TB + 200GB Flash
	IO Bandwidth	2.8GB/sec	2GB/sec	1GB/sec	1GB/sec +1.5GB/sec Flash
Rack	Fabric	2 Cisco UCS 6248UP Fabric Interconnects (Supports 5 racks) 2 Cisco UCS 2232PP 10 GE Fabric Extenders (per rack)	2 Cisco UCS 6296UP Fabric Interconnects (Supports 10 racks) 2 Cisco UCS 2232PP 10 GE Fabric Extenders (per rack)	2 Cisco UCS 6296UP Fabric Interconnects (Supports 10 racks) 2 Cisco UCS 2232PP 10 GE Fabric Extenders (per rack)	2 Cisco UCS 6248UP Fabric Interconnects (Supports 10 racks) 2 Cisco UCS 2232PP 10 GE Fabric Extenders (per rack)
	Servers	8	16	16	16
	Cores	160	320	256	320
	Memory	2TB	4TB	2TB	2TB
	Storage Capacity	168TB	384TB	768TB	768TB, 3.1TB Flash ²
	IO Bandwidth	22GB/sec	32GB/sec	16GB/sec	16GB/sec + 24GB/sec from Flash
	Usable Capacity with NoRAID and 3-Way Data Replication ¹	50TB	120TB	246TB	246TB

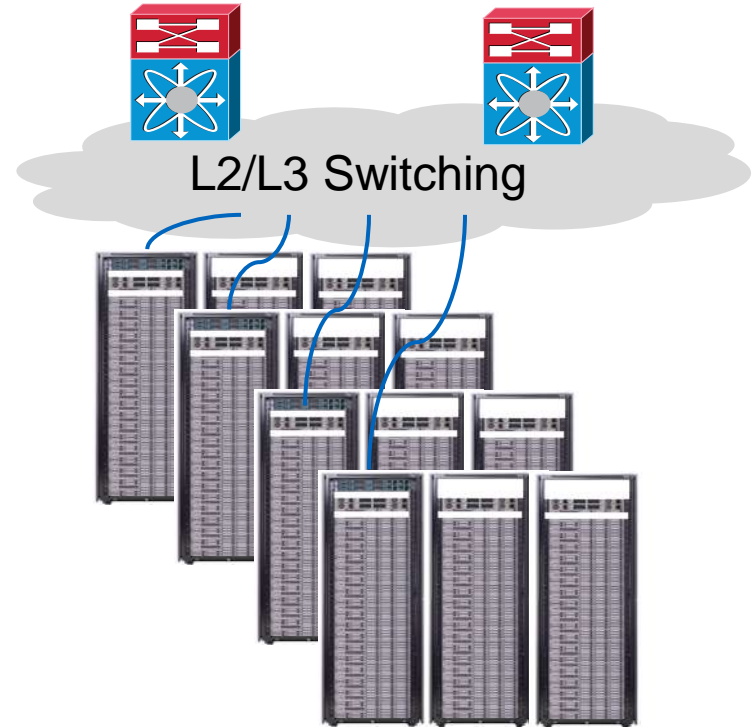
UCS - Designed to Scale



Single Rack
16 servers



Single Domain
Up to 10 racks, 160 servers



Multiple Domains

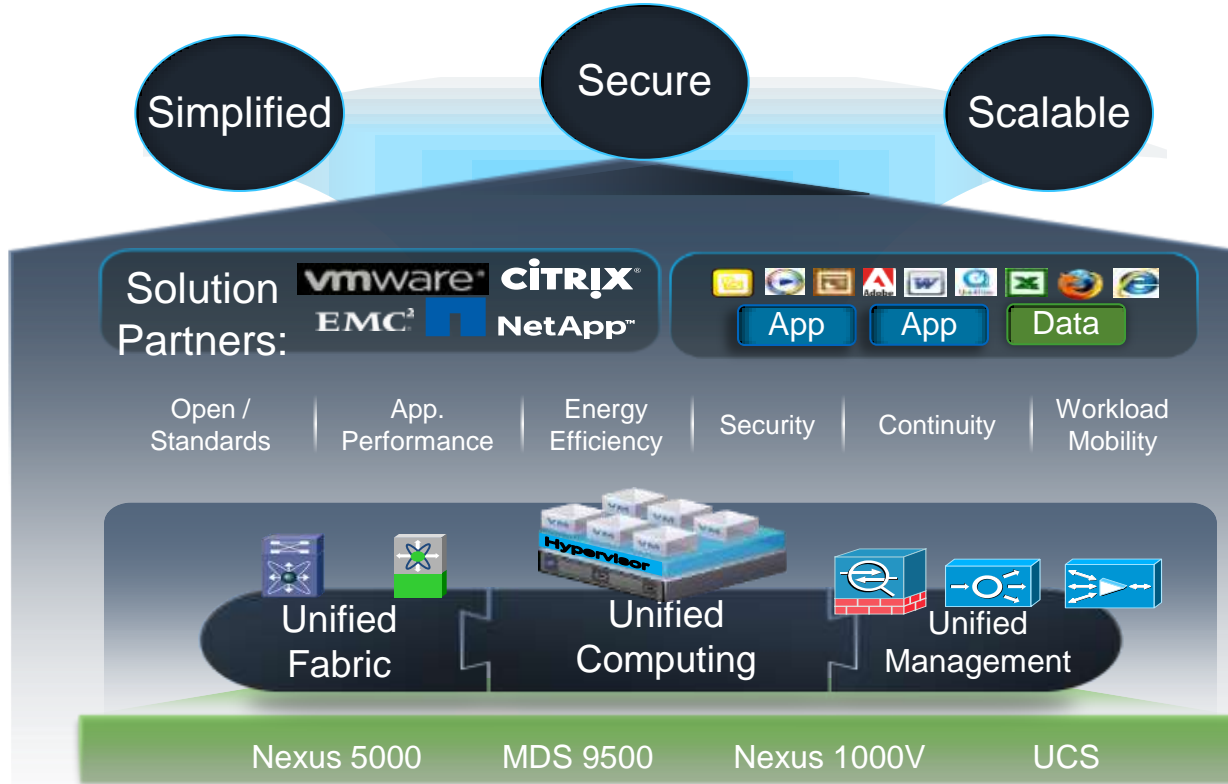
UCS Manager

UCS Central

Enterprise Applications Update



Virtual Desktop Infrastructure (VDI)



Core Elements

- Unified Computing System (UCS)
- Unified Fabric
- Unified Management
- Storage Partners
- Hypervisor Partners
- Virtual Desktop Software Partners
- Integrated, tested and validated

Desktop Virtualization Deployment Challenges

- Cost Per Seat – How optimize to achieve acceptable acquisition Cost and TCO
- Performance – Manageable Performance IOPS Cost – It is all about the architecture
- Security in Virtualized environment
- User Experience – What is the threshold for the user experience?
- Mix of user workloads environment
- Some applications can not be virtualized
- Scaling without major additional costs
- Extending the deployment to Remote offices/Branches



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